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ABSTRACT

A process for producing a tape-like material uniformly containing highly pure single-walled or multi-walled carbon nanotubes with a high density highly pure single-walled or multi-walled carbon nanotubes; a high-performance field emission electrode including the tape-like material; and a process for producing the field emission electrode.

For synthesis of carbon nanotubes by arc discharge, an inert gas or inert gas-containing mixed gas is jetted onto a cathode (2) comprising a carbon material from the inside (11a) of a hollow electrode (11) used as an anode, and simultaneously an arc is generated to form a path of arc discharge along the stream of the gas. Consequently, the cathode spot is prevented from irregularly moving, and thus highly pure carbon nanotubes can be produced. At the same time, by relatively moving both electrodes so as to move the cathode spot of the arc (3) on cathode, the synthesized carbon nanotubes are formed into a tape.

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